

PECULIARITIES OF PLANT COVER IN THE “METCHI KLDENEC” COUNTRYSIDE, STARA ZAGORA REGION

SYLVIA RADANOVA^a
SEVDALINA IVANOVA^b

^a*Section of Botany, Department of Biology, Faculty of Agriculture, Trakia University,
Students Campus, Stara Zagora 6000, Bulgaria*

E-mail: rossen_radanov@mail.orbitel.bg

^b*Regional Forest Administration, Stara Zagora*

Abstract

Six types associations are registered on an area of 72,4 hectares, including the low-altitude slopes of the Sarnena Sredna Gora Mountain, situated along the road from Stara Zagora to the Stara Zagora mineral baths.

Pinus nigra Arn. associations prevail.

The xerophilic and thermophilic species, such as *Carpinus orientalis Mill.*, *Quercus pubescens Willd.* and *Quercus cerris L.* are dominants and edificators in the deciduous associations.

The slopes with northern component offer favourable conditions for the development of associations, whose dominant are mesophilic species (*Tilia tomentosa Moench.*) on one hand, and the participaton of ephemeris (*Dasypyrum villosum (L.) Cand.*), in grass associations on the other.

Key words: dendrocenosis, dominant, edificator, association, Nature preservation status.

Introduction:

Information with respect to the character and peculiarities of plant cover of the Gornotrkiska Nizina and Stara Zagora field regions is comparatively scarce.

Gantchev (1965) describes in his works the natural replacement of *Q. pedunculiflora C. Koch* by the *Q. cerris L.* and *Q. frainetto Ten* cenoses as a result of increasing xerophytization. In the processes of plant cover degradation the anthropogenic factor is subsequently involved.

Erosion, soil getting shallower, and increasing rock outcrops mark the wide distribution of *Carpinus orientalis Mill.* and *Fraxinus ornus L.* in recent times.

Bondev (1991) defines the local vegetation as derivative, with the participation of Mediterranean elements, xerothermic grass species and ephemeris.

Materials and methods

Subject of the exploration is the plant cover of the “Metchi Kladenec” countryside, located to the north-west of Stara Zagora along the road to the Stara Zagora mineral baths.

The territory under investigation comprises strongly rugged terrain, including the lowest - altitude slopes of the Sarnena Sredna Gora Mountain with area of 72,4 hectares and altitude from 300 to 400 m. Tilts vary in the range from 4 ° ÷ 23 °.

Climate is moderately continental with Mediterranean influence (Tishkov, 1982).

The section belongs to Sredna Gora soil province, part of the Mediterranean soil region (Nam, 2003) and is characterized with maroon – leached, clay, slightly stony, loose soil, with average depth. Rock foundation is limestone.

Terrain studies have taken place in the 2003 ÷ 2004 time span.

Route method was used for determination of the floristic composition of communities.

The methods of Russian geo-botanical school have been used for preparation of phyto-cenotic characteristic of the region

Population status is defined on the basis of the works of Peev, Veltchev (1982).

Result and discussion

The plant cover in the region under investigation has never been subject to exploration up till now.

The floristic analysis that was performed established presence of 175 species belonging to 49 families, which are distributed as follows: division *Equisetophyta* – 1 species from 1 family, class *Pinopsida* – 1 species from 1 family, class *Magnoliopsida* – 146 species from 42 families, class *Liliopsida* – 26 species from 5 families.

Dicotyledons: representatives of *Lamiaceae* family prevail – 21 species, followed by *Asteraceae* family – 20 species and *Caryophyllaceae* family – 8 species.

Monocotyledons: with biggest number of representatives are *Poaceae* family – 12 species and *Liliaceae* family – 10 species.

In the vital forms spectrum perennials dominate – 60%, followed by annuals – 20%. Ligneous forms are 7,5% from the plant list, frutescent – 5,7%.

The groups of intermediate type are comparatively poorly represented – annual-biennial – 4 species, biennial-perennial – 5 species, annual-perennial – 2 species, ligneous- frutescent – 1 species.

Prevailing part of ligneous cenoses (54,5%) are with artificial origin and *Pinus nigra* Arn. is their dominant. Trees are 45 years old with canopy 0,9.

The under-tree cover is with poor species list and little projective cover – 3% - 5%.

In the first floor *Brachypodium sylvaticum* (Huds.) Beauv.(1,1), *Cardamine bulbifera* (L.) Crantz (1,1), *Arabis sagittata* (Bertol.) DC (1,1), *Lathraea squamaria* L.(1,1) and the climbing lianas *Clematis vitalba* L.(1,1)(Tertiary relict) and *Hedera helix* L.(1,1)(Tertiary relict) are situated.

The pure *Pinus nigra* Arn. dendro-cenoses are located to the north-east, east, south-east and south direction, in the low-altitude part of the slopes, where disturbances of soil complex under the influence of erosion have strongest effect.

In south-east direction, in the lower part of a slope with 400 m altitude and 18° tilt *Pinus nigra* - *Q. pubescens* + *Carpinus orientalis* association on an area of 5,6 hectares is situated with prevailing participation of *Pinus nigra* – 60%. Tree stand is rare, alternating big groups of *Pinus nigra* and little patches of mixed deciduous species - *Quercus pubescens* + *Carpinus orientalis* with offshoot origin.

There isn't any grass cover at some places, the basic rock is outcropped-erosion the IV-th degree.

Cenoses of *Quercus cerris* + *Carpinus orientalis* association (Table 1-1) are located on the slopes with western component with 400 m altitude and 21° ÷ 23° tilts.

Dominants are with offshoot origin, 5 ÷ 7 m high, with 40% shares each. Tree stand is with medium canopy 0,7 ÷ 0,8. The shares of *Quercus pubescens* and *Ulmus minor* Mill. are 10% each.

The grass floor is with parcelled out structure and 10% ÷15% projective cover.

Perennial geophytes with meso- and xero- mesophytic character prevail. In the spring aspect *Paeonia peregrina* Mill.(2,I -II), *Isopyrum thalictroides* L.(3 , I), *Corydalis bulbosa* (L.) DC (3,I), *Scilla bifolia* L. (3,I), *Cyclamen hederifolium* Ait. (3,I), *Parietaria officinalis* L. (2,I), *Viola alba* Bess.(2,I), *V. odorata* L. (2,I), *Polygonatum odoratum* (Mill.) Druce (4,I), *Arum maculatum* L.(3,I) can be found. Frutescent groups of *Ruscus aculeatus* L. (3,II) are located in the high altitude parts of the slope.

In the lower altitude parts and around the cuttings, where the drainage of torrents occurs, young grow up of *Quercus cerris* with natural origin can be spotted.

In western direction on an area of 1 hectare, altitude 300 m and 8 ° tilt, *Carpinus orientalis* + *Q. pubescens* association is situated.

Participation of of *Carpinus orientalis* is significant – 80 %. Tree stand is with offshoot origin and aggregate projective cover 70%-80%. Grass cover approaches the species list of the above described association. No dominant role of any of the species is observed on the grass floor.

During the exploration two phytocenoses of the *Tilia tomentosa* (Table 1-2) are registered, characterized by rich species list of the grass floor. The first is located to the right of the tarmac road, on a slope with northern aspect, altitude 400 m, on an area of 3,8 hectares. *Quercus cerris* and *Carpinus orientalis* take 10% each from the species list, and there are also single specimen of *Q. pubescens* and *Fraxinus ornus* L.

Canopy is 0,8 ÷0,9, the height of the edificator is 12÷15 m. There isn't any frutescent floor, grass cover is rare (10%÷15 %) and comprises typically forest species, some of them with Nature preservation status: *Hepatica nobilis* Mill.(2,II), *Lamiastrum galeobdolon* (L.) Ehrend. et Pol.(2, I) , *Paris quadrifolia* L. (2,I), *Fritillaria pontica* Wahl.(4,I), *Fritillaria orientalis* Adams (4,I), *Galanthus nivalis* L. (3,I).

The second cenosis is situated in the lower altitude part of a slope with southern aspect, altitude 350 m, tilt 8°, on an area of 0,7 hectares. Tree stand is 10 years old, with high projective cover - 80% ÷ 90%. Grass cover is sparse -10% ÷ 15%, species list does not differ from that of the first cenosis.

Round the tarmac road, groups of high-stemmed (*Populus nigra* L. (2,I), *Juglans regia* L.(1,I)(Tertiary relict), *Quercus cerris* L.(2,I), *Acer tataricum* L. (2,I)(Tr), *A. campestre* L.(1,I)(Tertiary relict)) and offshoot (*Ulmus minor* Mill.(2,I), *Corylus avellana* L.(2,I)(Tertiary relict), *Cornus mas* L.(1,I), *Sambucus ebulus* L.(2,II), *S. nigra* L.(2,I), *Lycium holimifolium* L.(2,II)) species are located.

On the open glades the cenoses of *Dasypyrum villosum* (L.) Cand.-(various grass species) develop (Table 1-3). Perennials, such as *Symphytum ottomanum* Friv. (2,I), *Althaea cannabina* L.(1,I), *Orlaja grandiflora* (L.) Hoffm.(2,II), *Doronicum hungaricum* Rchb.(1,I), *Himantoglossum hircinum* (L.) Spreng. (1,I), *Melissa officinalis* L.(2,I), *Marrubium peregrinum* L.(2,I), *Centaurea salonitana* Vis.(1,I) prevail, but no dominant role of any of the species is accounted.

On the glades, located on the crests of the slopes, except for the cereals, *Iris variegata* L.(1,I), *Dictamnus albus* L.(1,I), *Centaurea solstitialis* L.(1,I), *Echinops sphaerocephalus* L.(1,I), *Verbascum phlomoides* L.(1,I) are encountered.

Table 1. Species list of *Quercus cerris* + *Carpinus orientalis* (1) association; *Tilia tomentosa* (2) association; *Dasypyrum villosum* association– various grass species (3).

Taxon name	Biological type	1	2	3	4
<i>Tilia tomentosa</i> Moench.	t	-	70%	-	+
<i>A. platanoides</i> L.	t	-	-	2,I	+
<i>Ruscus aculeatus</i> L.	h	3,II	2,II	-	Tr,3
<i>Cotynus coggygria</i> Scop.	h	-	-	2,II	+,Tr
<i>Solanum dulcamara</i> L.	h	-	-	1,I	
<i>Carpinus orientalis</i> Mill.	t	40%	10%	-	Tr
<i>Ulmus minor</i> Mill.	t	10%	-	+	+
<i>Quercus cerris</i> L.	t	40%	20%	+	Tr
<i>Q. pubescens</i> Willd.	t	10%	-	-	
<i>Rubus caesius</i> L.	h	-	-	2,II	+
<i>Rosa canina</i> L.	h	-	-	2,II	
<i>Pyrus pyraaster</i> Burgsd.	t	-	-	1,I	
<i>Equisetum arvense</i> L.	p	-	-	2,I	
Cereals					
<i>Brachypodium sylvaticum</i> (Huds.) Beauv.	p	1,I	-	1,I	
<i>Festuca pseudovina</i> Hack.	p	-	-	1,I	
<i>Dasypyrum villosum</i> (L.) Cand.	a	-	-	3,III	
<i>Lolium multiflorum</i> Lam.	b- p	-	-	1,I	
<i>Bromus sterilis</i> L.	a	-	-	1,II	
<i>B. squaratus</i> L.	a	-	-	1,I	
<i>Arrhenatherum elatius</i> (L.) Beauv.	p	-	-	1,II	
<i>Aegilops cylindrica</i> Host.	a	-	-	1,II	
<i>A. triuncialis</i> L.	a	-	-	2,II	
<i>Phleum pratense</i> L.	p	-	-	2,I	
<i>Dactylis glomerata</i> L.	p	-	-	2,I	
Legumes					
<i>Trifolium pratense</i> L.	p	-	-	1,II	+
<i>T. arvense</i> L.	a	-	-	1,I	+
<i>Medicago falcata</i> L.	p	-	-	1,II	
<i>Mellilotus officinalis</i> (L.) Pall.	a	-	-	2,I	+
<i>Ononis spinosa</i> L.	p	-	-	1,I	
<i>Bituminaria bituminosa</i> (L.) Stirt.	p	-	-	1,II	+
<i>Vicia sativa</i> L.	a	-	-	1,I	
<i>Lathyrus laxiflorus</i> (Desf.) O. Kuntze	p	1,I	-	1,I	
<i>Dorycnium herbaceum</i> Vill.	p	-	-	1,I	
Various grass species					
<i>Peucedanum longifolium</i> Waldst.	p	1,I	-	1,I	
<i>Convallaria majalis</i> L.	p	2,I	2,I	-	+

Taxon name	Biological type	1	2	3	4
<i>Hepatica nobilis</i> Mill.	p	-	1,II	-	+
<i>Melittis melissophyllum</i> L.	p	-	2,I	-	+
<i>Cyclamen hederifolium</i> Ait.	p	3,I	-	-	+,2
<i>Isopyrum thalictroides</i> L.	p	3,I	-	-	+
<i>Geranium molle</i> L.	p	-	-	2,I	
<i>Symthytum ottomanum</i> Friv.	p	-	-	2,I	+
<i>Paeonia peregrina</i> Mill.	p	2,I-II	-	-	+
<i>Ranunculus ficaria</i> L.	p	1,II	2,II	-	
<i>R.nemorosus</i> DC	p	1,II	-	-	
<i>Ajuga genevensis</i> L.	p	2,II	2,I	-	
<i>A. laxmanii</i> (L.) Benth.	p	1,I	1,I	1,I	+
<i>A. reptans</i> L.	p	1,I	-	1,I	
<i>Arctium lappa</i> L.	b	-	-	1,I	+
<i>Allium rotundum</i> L.	p	-	-	1,I	+
<i>Lamium purpureum</i> L.	a	1,I	-	2,I	+
<i>Glechoma hederacea</i> L.	p	-	1,I	1,I	+
<i>Buglossoides purpureo-caerulea</i> (L.) Johnst.	p	2,I	1,I	1,I	+
<i>Galeopsis tetrahit</i> L.	a	1,I	-	1,I	+
<i>Lamiaestrum galeobdolon</i> (L.) Ehrend. et Pol.	p	2,I	1,I	-	
<i>Althaea cannabina</i> L.	p	-	-	1,I	+
<i>Parietaria officinalis</i> L.	p	2,I	1,I	-	+
<i>Inula ensifolia</i> L.	p	-	-	1,II	+
<i>I. germanica</i> L.	p	1,I	1,I	1,I	+
<i>Dipsacus laciniatus</i> L.	a	-	-	2,I	
<i>Rumex acetosa</i> L.	p	-	-	2,I	+
<i>Corydalis bulbosa</i> (L.) DC	p	3,I	2,I	-	+
<i>Scilla bifolia</i> L.	p	3,I	1,I	-	+
<i>Pulmonaria officinalis</i> L.	p	2,I	2,I	-	+
<i>Verbena officinalis</i> L.	p	-	-	1,I	+
<i>Silene viridiflora</i> L.	p	-	-	1,I	
<i>Veronica officinalis</i> L.	p	-	-	-	+
<i>V.beccabunga</i> L.	p	-	-	-	+
<i>V.hederifolia</i> L.	a	-	-	-	
<i>Torilis japonica</i> (Houtt.) DC	a-b	-	-	-	
<i>Polygonatum odoratum</i> (Mill.) Druce	p	4,I	2,I	-	+
<i>Paris quadrifolia</i> L.	p	-	2,II	-	+
<i>Fritillaria pontica</i> Wahl.	p	2,II	4,I	-	R ₁ ,R ₂
<i>Fritillaria orientalis</i> Adams	p	2,II	4,I	-	R ₁
<i>Asparagus officinalis</i> L.	p	2,II	-	-	+
<i>Galantus nivalis</i> L.	p	-	3,I	-	E, +, 1,2,3
<i>Leopoldia tenuiflorum</i> Tausch.	p	1,I	-	1,I	

Taxon name	Biological type	1	2	3	4
<i>Clinopodium vulgare</i> L.	p	1,I	-	1,I	
<i>Saponaria officinalis</i> L.	p	-	-	2,II	+
<i>Viscaria vulgaris</i> Rohl.	p	-	-	1,I	
<i>Persicaria hydropiper</i> (L.) Spach.	a	-	-	1,I	+
<i>Salvia verticillata</i> L.	p	-	-	2,I	+
<i>S. pratensis</i>	p	-	-	1,I	
<i>S. sclarea</i> L.	p			1,I	
<i>Doronicum hungaricum</i> Rchb.	p	-	-	1,I	
<i>Himantoglossum hircinum</i> (L.) Spreng.	p	-	-	1,I	+,1,2,5
<i>Melissa officinalis</i> L.	p	-	-	2,I	+
<i>Marrubium peregrinum</i> L.	p	-	-	2,I	+
<i>Centaurea salonitana</i> Vis.	p	-	-	1,I	
<i>Acanthus spinosus</i> L.	p	-	-	1,I	+
<i>Conium maculatum</i> L.	a-b	-	-	1,I	+
<i>Artemisia absinthium</i> L.	p	-	-	1,I	+
<i>Urtica dioica</i> L.	b	-	-	2,II	+
<i>Stachys recta</i> L.	p	-	-	2,II	+
<i>S. germanica</i> L.	p	-	-	2,II	+
<i>Orlaja grandiflora</i> (L.) Hoffm.	a	-	-	2,II	
<i>Arum maculatum</i> L.	p	3,I	2,I	1,I	+
<i>Coronilla varia</i> L.	p	-		2,II	+
<i>Anthemis arvensis</i> L.	a	-	-	2,II	
<i>A. tinctoria</i> L.	p	-	-	1,I	+
<i>Agrimonia eupatoria</i> L.	p	-	-	2,II	+
<i>Tanacetum vulgare</i> L.	p	-	-	1,I	+
<i>Convolvulus canthabrica</i> L.	p	-	-	1,II	
<i>Aristolochia clematitis</i> L.	p	-	-	1,I	+
<i>Echium italicum</i> L.	b	-	-	1,II	+
<i>Heleborus odorus</i> L.	p	3,I	2,II	-	+
<i>Viola alba</i> L.	p	2,I	-	-	
<i>V. arvensis</i> L.	a	-	-	2,II	
<i>V. odorata</i> L.	p	2,I			+
<i>Cardamine bulbifera</i> (L.) Crantz.	p	2,I	1,I	-	+
<i>Calamintha sylvatica</i> Bromf.	p	1,I	-	-	
<i>Campanula trachelium</i> L.	p	1,I	-	1,I	
<i>C. sibirica</i> L.	b	-	1,I	1,I	
<i>C. rapunculoides</i> L.	p	1,I	-	-	
<i>Cirsium vulgare</i> (Savi) Ten.	p	-	-	1,I	
<i>Euphorbia niciciana</i> Borb.	p	-	-	1,I	
<i>E. amygdaloides</i> L.	p	1,I	-	1,I	
<i>Potentilla sulphurea</i> Lam.	p	1,I	1,I	-	
<i>Silene noctiflora</i> L.	a- p	-	-	1,I	
<i>Knautia arvensis</i> (L.) Coulter.	p-b	-	-	1,I	

Taxon name	Biological type	1	2	3	4
<i>Prunella vulgaris</i> L.	p	-	1,I	-	+
<i>Cucobalus baccifer</i> L.	p	-	-	1,I	
<i>Chaerophyllum bulbosum</i> L.	b-p	1,I	-	1,I	
<i>Ferulago sylvatica</i> (Bess.) Reichenb.	p	-	-	2,I	+
<i>Laser trilobum</i> (L.) Borkh.	p	-	-	1,I	+
<i>Galium aparine</i> L.	a	-	-	2,II	+
<i>G. tricornutum</i> Dandy	a	-	-	2,II	
<i>G. verum</i> L.	p	-	-	2,II	
<i>Erigeron acer</i> L.	a-p	-	-	1,I	
<i>Origanum vulgare</i> L.	p	-	-	2,II	+
<i>Xeranthemum annuum</i> L.	a	-	-	2,II	+
<i>X.cylindraceum</i> S.et S.	a	-	-	1,I	
<i>Lapsana communis</i> L.	a	-	-	1,I	
<i>Melampyrum arvense</i> L.	a	-	-	2,II	
<i>Plantago altissima</i> L.	p	-	-	1,I	
<i>Mycelis muralis</i> (L.) Dum.	p	-	-	1,I	
<i>Cruciata laevipes</i> Opiz.	p	2,I	1,I	-	
<i>Eragrostis pilosa</i> (L.) P.B.	a	-	-	1,I	
<i>Bupleurum rotundifolium</i> L.	a	-	-	1,I	
<i>B. praealtum</i> L.	a	-	-	2,II	
<i>Serratula radiata</i> (W.et K.) Bieb.	p	-	-	1,I	
<i>Linaria vulgaris</i> Mill.	p	-	-	1,I	+
<i>Achillea millefolium</i> L.	p	-	-	2,II	+
<i>A. clypeolata</i> Sibth.	p	-	-	1,I	+,Tr
<i>Arabis sagittata</i> (Bertol.) DC	b	1,I	-	-	
<i>Papaver phoeas</i> L.	a	-	-	1,I	
<i>Vaccaria hispanica</i> (Mill.) Rasch.	a	-	-	1,I	
<i>Dianthus armeria</i> L.	a-b	-	-	1,I	
<i>Petrorhagia prolifera</i> (L.) Ball et Heyw.	a	-	-	1,I	
<i>Hypericum perforatum</i> L.	p	-	-	2,II	+,Be
<i>Primula veris</i> L.	p	2,II	1,I	-	+
<i>Thymus striatus</i> Vahl.	p	-	-	2,III	+
<i>Alliaria petiolata</i> (Bieb.) Cavara et Grande	a-b	2,I	-	-	+
<i>Verbascum phlomoides</i> L.	b	-	-	1,I	+
<i>V. phoeniceum</i> L.	p-b	-	-	1,I	+
<i>V. xanthophoeniceum</i> Grsb.	p-b	-	-	1,I	

Legend: + - Protected in conformity with Medicinal Plants Law (2000);
Tr - Tertiary relict;
Be - Balkan endemic;
R₁ - Rare species with respect to the Red Book of the People's Republic of Bulgaria;

E - Endangered species with respect to the Red Book of the People's Republic of Bulgaria;

1 - Protected in conformity with Bio Diversity Law (2002);

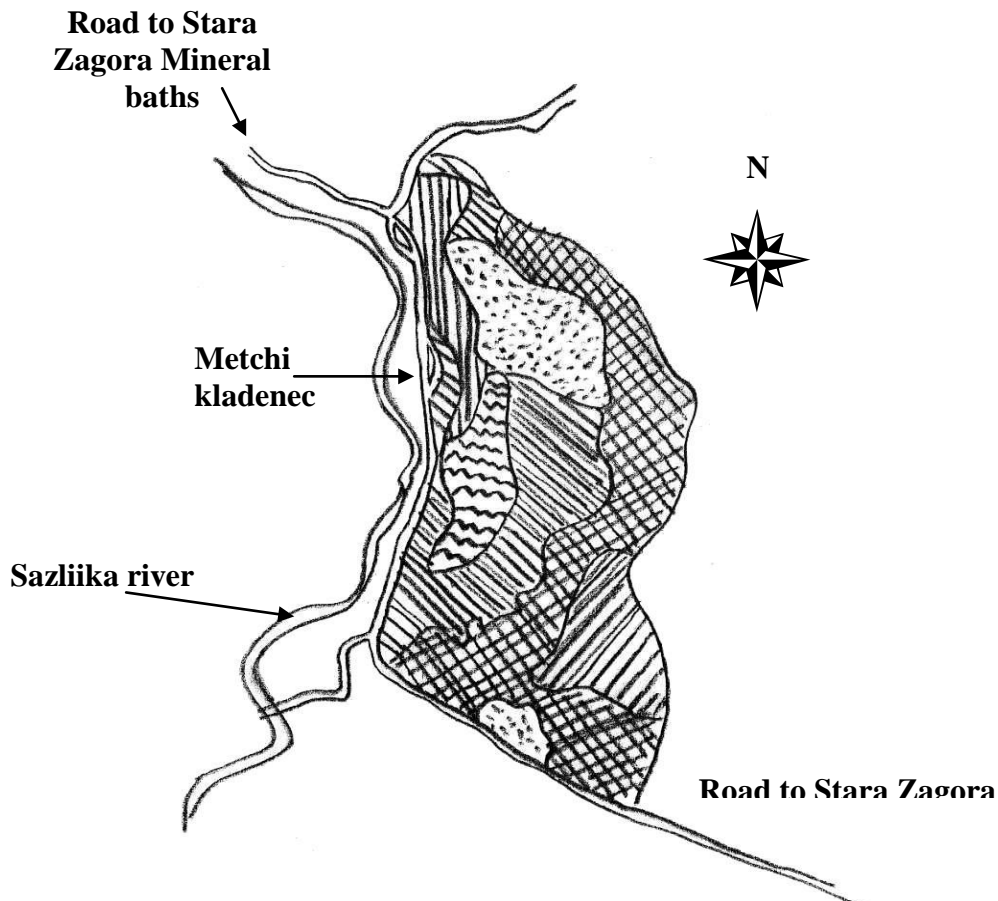
2 - Protected in conformity with CITES (1992);

3 - Protected in conformity with Dir. 92/43 EU (1992);

R₂ - Rare species in conformity with IUCN (1997) ;


5 - Protected in conformity with Bern Convention (1998).

Situation of plant associations in the region under investigation is given on **Fig. 1**




Legend :

 *Pinus nigra* association

 *Pinus nigra* - *Q. pubescens* + *Carpinus orientalis* association

 *Quercus cerris* + *Carpinus orientalis* association

 *Carpinus orientalis* + *Q. pubescens* association

 *Tilia tomentosa* association


 *Dasypyrum villosum* (L.) Cand. association - various grass species

Fig. 1. Spatial situation of plant associations in the "Metchi kladenec" countryside, Stara Zagora region

In the territory under investigation 10 Tertiary relicts, 1 Balkan endemic, and 78 species with Nature preservation status in conformity with Bulgarian and international legislation have been registered (**Table 1-4**).

Significant part of the species are medicinal plants (42%).

High Nature preservation value possess the populations of *Fritillaria pontica* Wahl., *Fritillaria orientalis* Adams, *Ruscus aculeatus* L., *Cyclamen hederifolium* Ait. and *Galanthus nivalis* L. (**Table 2-5**).

Табл.2. Characterization of a fragment of the *Fritillaria pontica* Wahl. population

species	<i>Fritillaria pontica</i> Wahl.
altitude	350m
Rock foundation	limestone
aspect	North-West
irrigation	Athmospheric moistening
area	1 m ²
number	16 pcs.
status	Very good, fructiferous

Табл.3. Characterization of a fragment of the *Ruscus aculeatus* L. population

species	<i>Ruscus aculeatus</i> L.
altitude	400 m
Rock foundation	limestone
aspect	West
irrigation	Athmospheric moistening
area	10 m ²
number	5 pcs.
status	Very good, fructiferous

Табл.4. Characterization of a fragment of the *Cyclamen hederifolium* Ait. population

species	<i>Cyclamen hederifolium</i> Ait.
altitude	380 m
Rock foundation	limestone
aspect	West
irrigation	Athmospheric moistening
area	1 m ²
number	5 pcs.
status	Very good

Табл.5. Characterization of a fragment of the *Galanthus nivalis* L. population

species	<i>Galanthus nivalis</i> L.
altitude	400 m
Rock foundation	limestone
aspect	West
irrigation	Athmospheric moistening
area	1 m ²
number	12 pcs.
status	Very good, fructiferous

Conclusion:

The plant communities, described in the Metchi Kladenec countryside, Stara Zagora region are in conformity with the objective laws, connected with the specificity of the plant cover in anthropogenically burdened regions.

The prevailing participation of *Pinus nigra* Arn. dendro-cenoses is result of the significant in scale afforestations with this species in the near past, aiming to make up for the digressive changes in the landscape.

The presence of *Carpinus orientalis* Mill., *Quercus pubescens* Willd. and *Quercus cerris* L. as residual elements of the aboriginal vegetation supports the common process of xerophytization of the climate in world scale.

The results obtained can be used as a data base in future floristic and phytocenological studies.

The establishment of the species with Nature preservation status requires undertaking of concrete measures for the protection of their populations.

References:

- Tishkov, H. 1982. Climatic partition. – B: Galabov, Zh (ed.) Geography of Bulgaria, Bulgarian Academy of Science , Sofia, I: 240 – 247.
- Gantchev, I. 1965. Residual forests in the Stara Zagora field and its peripheral hills (formation, successions and floristic analysis). Proceedings of Botany Institute, Bulgarian Academy of Science, XIV, VII: 19-87; XII: 5-89
- Bondev, I. 1991. Vegetation in Bulgaria. A map of a scale 1: 600 000. Univ. Ed., S, 184.
- Nam, K. 2003 Natural geography of Bulgaria. Geoflora, Sofia, 282.
- Peev, D., V. Veltchev. 1982. Scheme for evaluation of the status and value of the natural vegetation complexes with regard to their protection. - B: National theoretical conference for protection and reproduction of the environment-Sl. Bryag, vol. I, S., 286-289.